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cites "Pluk. Tab. 33 fig. 6," but forgets to withdraw this citation from his synonymy under *A. rubra*.—A. S. HITCHCOCK, U. S. Department of Agriculture.

CARL SCHUMANN.

A BIOGRAPHICAL SKETCH¹ (WITH PORTRAIT).

KARL MORITZ SCHUMANN was born June 17, 1851, in Görlitz (Silesia). After attending the Real-Gymnasium of his native town until 1869, he studied at the universities of Berlin, Munich, and Breslau, devoting himself at first to chemistry, later principally to botany and related sciences. The doctor's degree was conferred upon him by the University of Breslau, July 19, 1873, the title of his dissertation being *Dickenwachsthum und Cambium*.

A year previously he had accepted a position as assistant to Professor Dr. GOEPPERT, the famous authority on fossil plants, which he held until the spring of 1876. In November 1875 he passed with honor the Prussian state examination, and shortly afterwards took up the profession of teaching. For eight years, beginning with 1876, he taught in the Real-Gymnasium "Zum heiligen Geist" in Breslau. A work entitled *Kritische Untersuchung über die Zimmländer*, which he wrote during this time, showed as much historical and geographical as scientific knowledge. On account of this book he was called in the summer of 1884 to Berlin, where he was appointed curator of the Berlin Botanical Museum recently established by A. W. EICHLER. In June 1892 he was appointed professor, and in the spring of 1893 he obtained the right to deliver academic lectures on botany in the University of Berlin. On March 22, 1904, death closed his full and fertile life.

The contributions by which SCHUMANN advanced scientific botany are extraordinarily numerous, and as the work of a single man most astonishing. We may divide them into purely systematic, phytogeographic, morphological, biological, pharmaceutical, didactical, biographical, and the work of reviewing.

¹ Excerpt from a manuscript of Professor Volkens.



In MARTIUS'S *Flora Brasiliensis* he worked up Triuridaceae, Cactaceae, Sterculiaceae, Tiliaceae, Malvaceae, Bombacaceae, Bignoniaceae, and Rubiaceae; and for ENGLER and PRANTL'S *Die natürlichen Pflanzenfamilien*, in addition to the above mentioned families, he treated Chlaenaceae, Elaeocarpaceae, Asclepiadaceae, and Apocynaceae. Of monographs there exist from his pen Marantaceae, Musaceae, and Zingiberaceae in ENGLER'S *Pflanzenreich*; and Sterculiaceae in ENGLER'S *Monographien ausgewählter afrikanischer Pflanzenfamilien*. As an independent work he published the *Gesamtbeschreibung des Cacteen* and *Iconographia Cactacearum*. The new species he described may be numbered by hundreds, probably by thousands, especially notable among them being those of tropical Africa. For the most part they were published in ENGLER'S *Botanische Jahrbücher*.

Among the phytogeographic works of SCHUMANN are *Flora von Kaiser-Wilhelmsland*, in which he was assisted by LAUTERBACH; *Flora von Neu-Pommern*; and *Flora der deutschen Schutzgebiete*. Of his biological and didactical treatises the most important are his investigations on myrmecophilous plants, and two text-books on systematic botany, *Lehrbuch der systematischen Botanik* and *Practicum für morphologische und systematische Botanik*, the latter appearing after his death. Among his pharmaceutical contributions are the new edition of BERG and SCHMIDT'S *Atlas der officinellen Pflanzen*, observations on Hydrastis and Podophyllum, and several articles on plants yielding caoutchouc and kola. Among his biographical works are numerous necrologies of well-known botanists; and his editorship of JUST'S *Jahrbuch* must not be forgotten.

The starting-point of SCHUMANN'S morphological investigations was his studies on the development of the organs of flowers. These interested him most deeply and allowed him to show in a striking manner his masterly descriptive powers. On observations of this kind were based his papers on the boragoid, on the monochasia, on the ramification of Pandanus; as well as his studies in regard to the morphology of flowers, the results of which he published in his voluminous work *Ueber den Blütenschluss*. SCHUMANN was the first to point out the untenability of the prevailing theory of the purely formal morphology of flowers. He showed that mere comparison and the consideration of teratological facts lead to the most erroneous ideas, if it is desired to account for the position of the organs in their causal connection. The only way to advance the science of the morphology of flowers, he claimed, is to apply the principles which SCHWENDENER had employed in his mechanical theory of the position of the leaves in relation to the vegetative organs. It must not be concealed that SCHU-

MANN later, in his *Morphological Studies*, I and II, did not strictly adhere to this view, and that he even began to doubt the basis of the mechanical theory of leaf position. To him, however, belongs the honor of having immensely advanced botanical morphology by means of a wealth of single observations, at a period when this branch of science elicited nowhere else the interest necessary to produce results.

When we review the life-work of SCHUMANN we find ourselves confronted by a problem. How did a man to whom every day brought new professional duties still find time to occupy himself so fully with scientific work? The solution is to be found in his creative impulse, in his gift of easy comprehension, in his powers of clear expression, and in his conscientious desire to crowd into his daily task the full force of all his intellectual activities.

The honors conferred upon SCHUMANN were not in proportion to his scientific importance or his distinguished gifts as a teacher. He was not made unhappy by this, but contented himself with the recognition of his colleagues, and found abundant compensation in the love and veneration everywhere paid him for his human qualities, his bright and cheerful nature, his courtesy, and his never-failing willingness to help.—*Translated by J. PERKINS.*

A CORRECTION.

IN THE June issue of the BOTANICAL GAZETTE, Mr. PLOWMAN publishes an article on "The celloidin method with hard tissues," stating that it has been "developed and perfected by Dr. E. C. JEFFREY," and that it "has been incompletely described at second and third hand elsewhere," in this connection calling attention to my book on *Methods in plant histology*. The collodion method was published in 1879, the celloidin method in 1882, and for nearly two decades both methods have been matters of text-book knowledge. Since I have used celloidin very little, except for woody tissues, I have made no effort to improve the method, but have simply followed more or less exactly and have described with slight variations the procedure in vogue in Professor EYCLESHYMER'S classes at the University of Chicago since 1893. Consequently, Mr. PLOWMAN is mistaken in assigning my account so high a rank as second hand, when in reality it is an accumulation so old that it cannot claim to be anything more than an ordinary text-book account, culled from older text-book accounts. Indeed, the use of hydrofluoric acid is the only essential addition by Mr. PLOWMAN to the long used celloidin methods.—CHARLES J. CHAMBERLAIN.